1,061,383

PATENT SPECIFICATION

DRAWINGS ATTACHED

1061383

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Int. Cl.:—F 24 f

COMPLETE SPECIFICATION

Improvements in or relating to Operating Theatre Hatch

I, JACK EDWARD FIRMAN, of Cherry Tree Cottage, Pitton, Salisbury, Wiltshire, a British Subject, do hereby declare the invention, for which I pray that a patent may be granted to me, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to operating theatre hatches.

According to the present invention there is provided a hospital operating theatre hatch comprising a hatch structure having an open front and a closable back, a plenum chamber at the top of the hatch, means for introducing air into the top of the hatch from the plenum chamber, filter means, means for extracting air from the bottom of the hatch and means for transferring the air withdrawn from the bottom of the hatch via said filter means to said plenum chamber. Means may be provided between said filter means and said plenum chamber for discharging some of the extracted air to the ambient atmosphere whereby only a portion of the extracted air is recirculated the remainder being discharged after filtering. A turnstile like structure in the form of a swab rack may be mounted in the hatch and hatch door may be provided at the back and/or front of the hatch opening, preferably at the back only.

Referring to the drawings accompanying the provisional specification:—

Fig. 1 is a front elevation of one form of hatch structure made in accordance with the present invention designed for incorporation in a wall dividing an operating theatre from the sluice or other adjacent room.

Fig. 2 is a rear elevation of the structure shown in Fig. 1;

Fig. 3 is a plan of the structure shown in Figs. 1 and 2;

Fig. 4 is a sectional side elevation taken on the line IV — IV of Fig. 3;

Referring to the accompanying drawings:—

Fig. 5 is a rear elevation of a modified hatch structure made in accordance with the present invention;

Fig. 6 is a plan view on the line VI — VI of Fig. 5 the turnstile structure having been removed.

Figs. 7 and 8 are sectional elevations on the lines VII — VII and VIII — VIII of Fig. 6 respectively.

In the form shown in Figs. 1 to 4 of the drawings the appliance comprises a cabinet 2 having outer vertical side walls 4 and 6 between which are disposed horizontal members consisting of the base or floor 8 and a hatch, the bottom and top of which are defined by members 10 and 12 respectively. The space between the floor 8 and member 10 is closed on the back or sluice side by a removable servicing panel 14 to give access to a filter element 16 mounted on the floor 8. The member 10 supports centrally a well 18 of imperforate sheet metal arranged to receive a removable tray 20. The top of said well is closed by a stiff perforated metal sheet 22 provided with a central bearing 24. The back 25 of the recess is open. The filter is provided with a flange 26 which co-acts with the back wall of the well 18 and flanges on the floor 8 and side walls 4 and 6 to form a seal usually completed by a gasket of expanded rubber or polyurethane (not shown). The side walls 4 and 6 are joined at the top where they form an arch above the member 12. An inner wall 27 is provided roughly parallel with the walls 4 and 6 and the space between the outer walls 4 and 6 and the inner walls 27 is closed front and back to form duct 28 in which the circulation of air is indicated by arrows.

The chamber 30 formed above the member 12 houses a motor and fan unit 32 which draws filtered air from the outlet of the filter 16 up the ducts 28 to the inlet of the fan. The fan unit 32 is mounted above an aperture in the member 12 which is closed by a perforated metal sheet 33. The spindle 36 rotatably mounted in a bearing 34 which is secured to the sheet 33 supports a frame 35 at its upper end. The frame 35 is similarly supported at its lower end by a further shaft 36 which is

rotatably mounted in the bearing 24. Between the sides of the frame 35 are secured a number of arms 38 to which are attached hooks 40. The spindle and arms may be made of metal or plastic. By turning this turnstile like structure the hooks at the front can be made accessible at the back. The whole of the structure above described is intended to be fitted in an aperture in the wall separating the operating theatre from the sluice room. In the back wall of the chamber 30 is an outlet 42. A pair of hinged doors 44 are provided and mounted on the walls 4 and 6 at the back for closing the hatch which doors would only be opened for removal of the swabs on completion of the operation. By omitting the turnstile like structure of spindle 36 with arms 38 the unit can be used for the transfer of sterile equipment from a sterile room to the operating theatre.

In operation when the fan is working air is drawn from the hatch area through the bottom perforated metal sheet 22, through the filter 16 up the ducts 28 through the fan 32 discharging into the chamber 30 from where the greater part of the air is delivered through the perforated metal sheet 33 in the member 12 so that a steady flow of slowly moving air passes down over the hooks 40 to the perforated metal sheet 22 whilst some of the air is discharged through the outlet 42 into the sluice room. At all times the air pressure in the theatre has to be kept slightly above that in the sluice room to prevent contamination from the swabs on the hooks 40 or in the sluice room from re-entering the theatre. The spindle 36 together with frame 35 and arms 38 is removable as is also the bottom perforated sheet 22 so that it can be sterilised.

In the modified form shown in Figs. 5 to 8 the same reference numerals are used for the same parts since the general structure of the hatch remains unchanged. Instead of the door closing device shown in Fig. 2 for the rear doors magnets 50 are mounted on the frame which are contacted by armatures 52 on the doors and handles 54 are fitted. The base is substantially changed; the perforated plate 22 is dispensed with and the well 18 converted into a sink 56 with sloping floor 58 a water inlet 60 and drain 62 arranged so that the whole surface is substantially flooded with a thin layer of water during use. A central pedestal 64 is provided to receive the bottom end of the spindle 36 and keep it clear of the bottom of the sink 58.

WHAT I CLAIM IS:—

1. A hospital operating theatre hatch comprising a hatch structure having an open front and a closable back, a plenum chamber at the top of the hatch, means for introducing air into the top of the hatch from the plenum chamber, filter means, means for extracting air from the bottom of the hatch and means for transferring the air withdrawn from the bottom of the hatch via said filter means to said plenum chamber.

2. A hospital operating theatre hatch according to claim 1 wherein means are provided between said filter means and said plenum chamber for discharging some of the extracted air to the ambient atmosphere whereby only a portion of the extracted air is recirculated the remainder being discharged after filtering.

3. A hospital operating theatre hatch according to claim 1 or 2 wherein a turnstile like structure is supported in bearings mounted on the top and bottom of the hatch having prongs for the reception of swabs or instruments for transfer through the hatch.

4. A hospital operating theatre hatch according to claim 3 wherein said turnstile structure is removably mounted.

5. A hospital operating theatre hatch according to either one of claims 3 or 4 including means for holding said turnstile like structure with the arms extending across the hatch opening.

6. A hospital operating theatre hatch according to any one of the preceding claims wherein doors are provided to said hatch opening.

7. A hospital operating theatre hatch according to claim 6 wherein doors are provided at the back only.

8. A hospital operating theatre hatch substantially as herein described with reference to and as shown in Figs. 1 to 4 of the drawings filed with the provisional specification.

9. A hospital operating theatre hatch substantially as herein described with reference to and as shown in Figs. 5 to 8 of the drawings filed herewith.

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Agents for the Applicant.

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1061383 COMPLETE SPECIFICATION

1 SHEET *This drawing is a reproduction of the Original on a reduced scale*

Fig. 5.

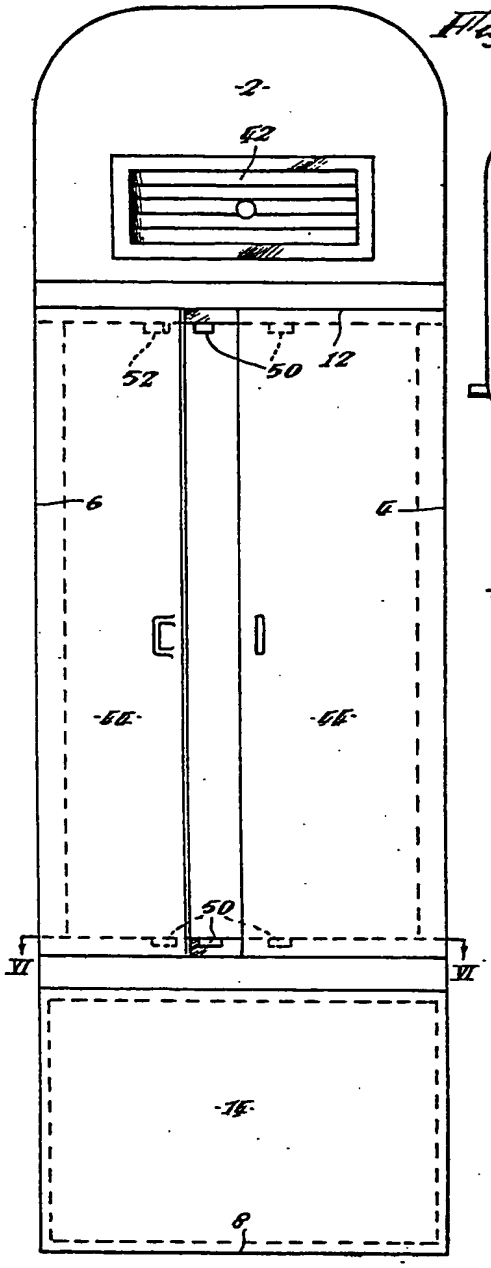
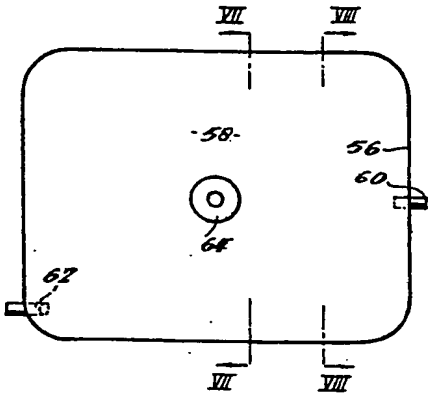


Fig. 6.



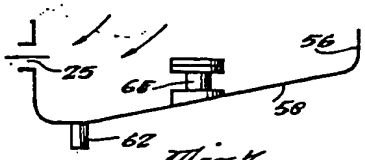


Fig. 7.

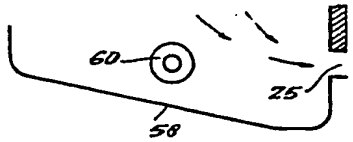


Fig. 8.

Fig. 1.

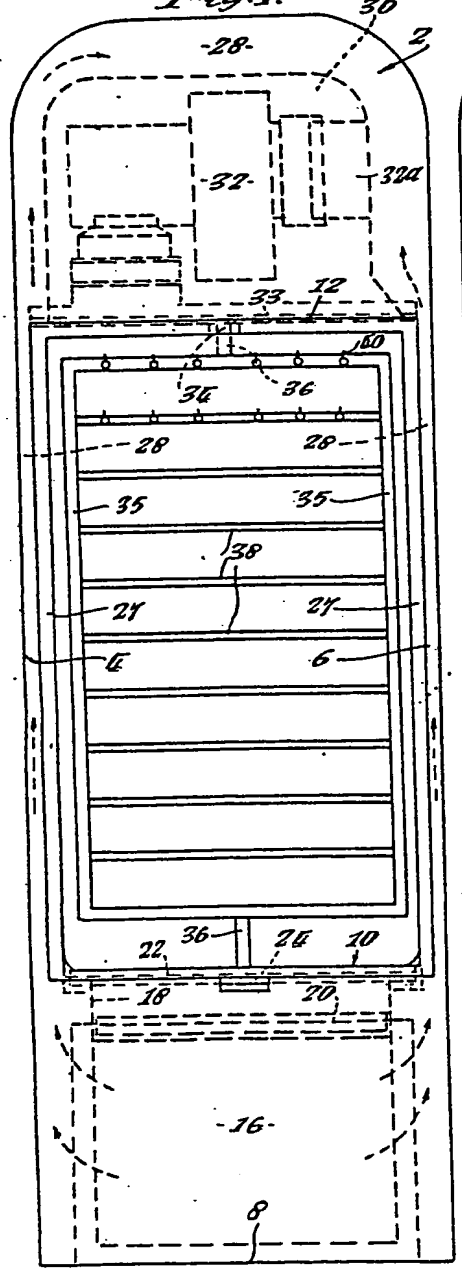
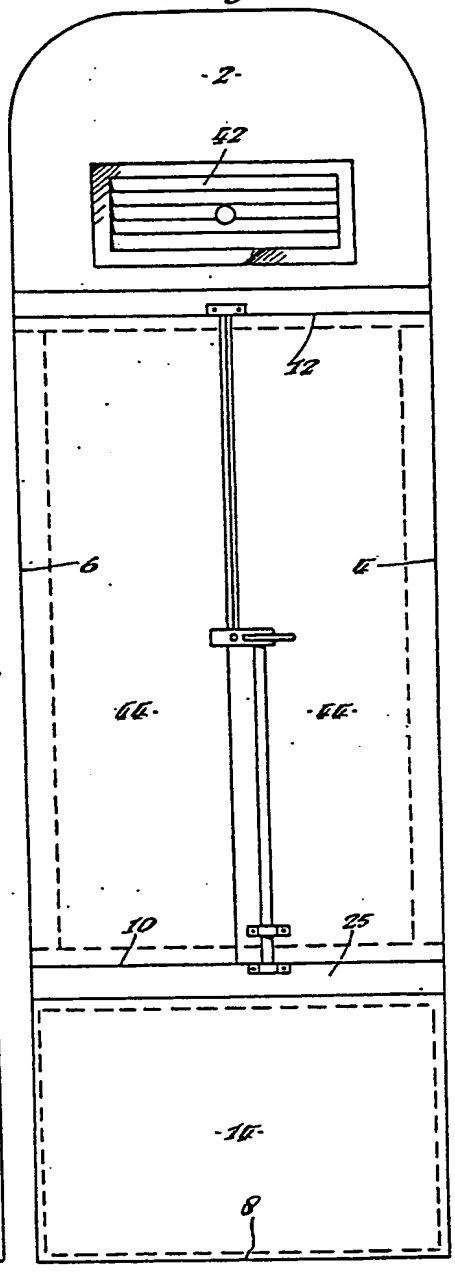


Fig. 2.



1061383 PROVISIONAL SPECIFICATION

2 SHEETS *This drawing is a reproduction of the Original on a reduced scale*
Sheets 1 & 2

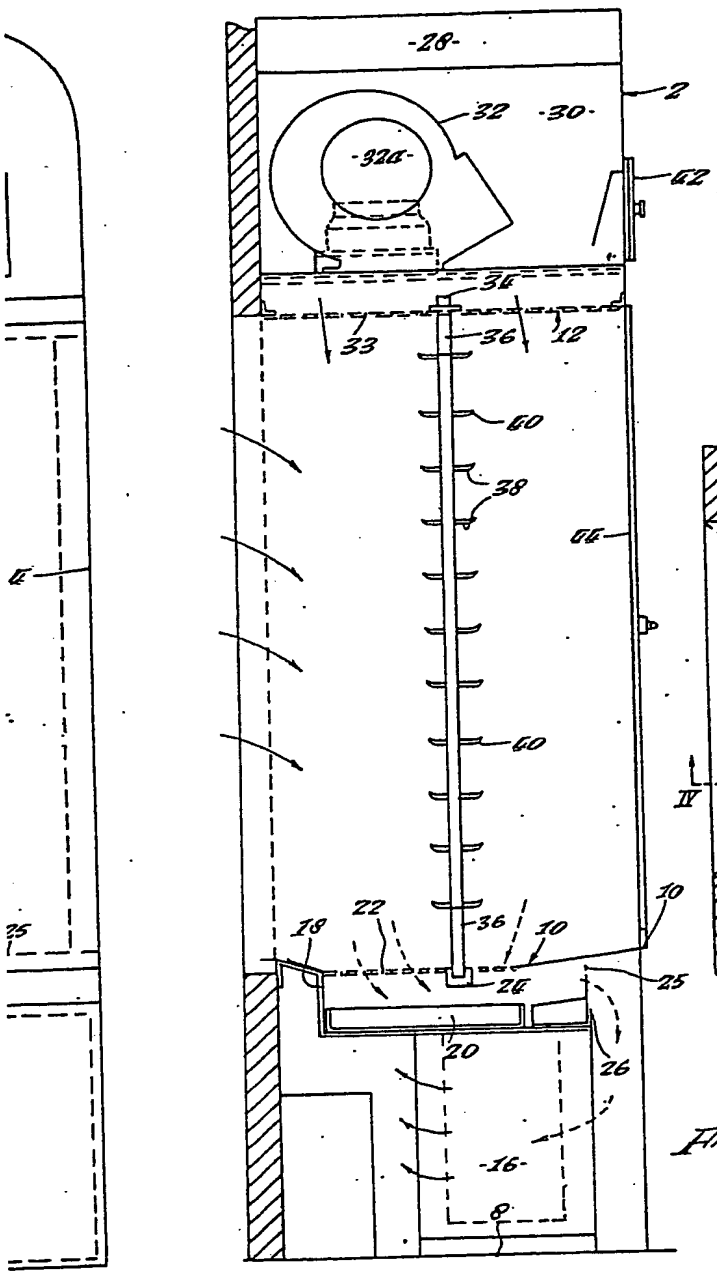


Fig. 4.

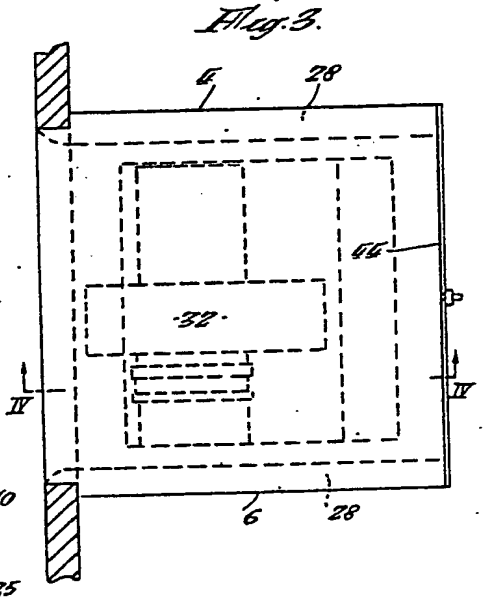


Fig. 3.

1061383 PROVISIONAL SPECIFICATION
2 SHEETS This drawing is a reproduction of the Original on a reduced scale
Sheets 1 & 2

Fig. 1.

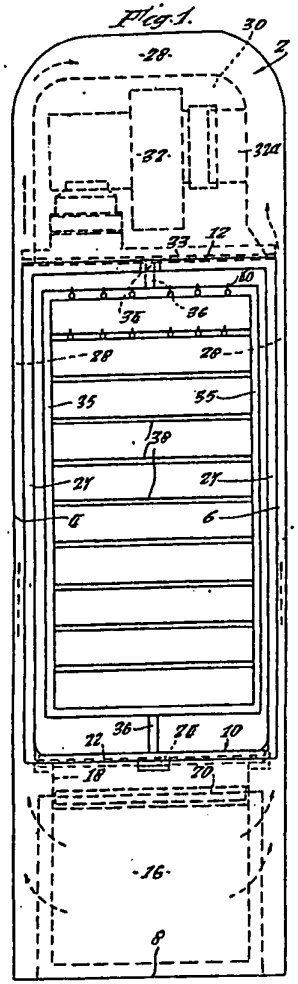
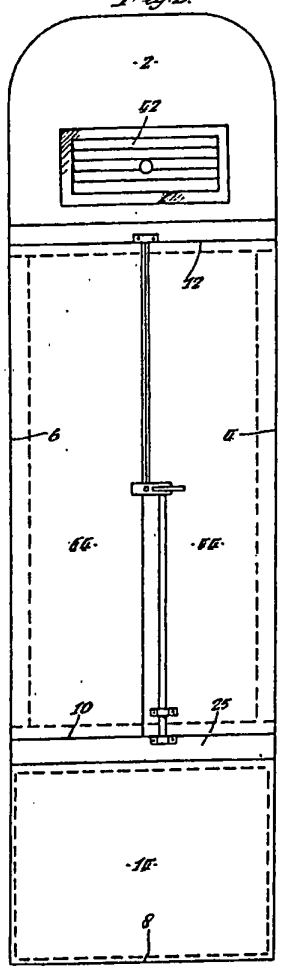


Fig. 2.



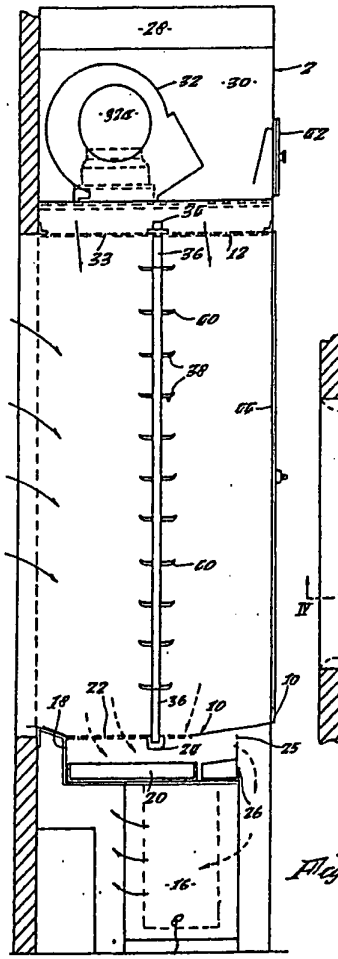


Fig. 4.

Fig. 3.